Applicant : Bruce E. Kaskel   Attorney's Docket No.: 07844-416001 / P380
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Remarks

          Claims 1-20 are pending. Claims 16-20 have been added. No new matter has been
added. Applicant respectfully requests reconsideration in view of the foregoing amendments and
these remarks.

          Claims 7 and 8 have been indicated as being merely objected to as being dependent upon
a rejected base claim, but would be allowable if rewritten in independent form including all of
the limitation of the base and any intervening claims. Applicant thanks the Examiner for
indicating that claims 7 and 8 are merely objected to. Applicant has amended claims 7 and 8 to
include limitations from claim 1 and believe that the claims as presented are in allowable form.

          Claims 1-6 and 9-15 were rejected under 35 USC 102(e) as being anticipated by Knittel'
(US patent no. 6,369,816). Applicant respectfully traverses the rejection.

          Knittel shows a method for modulating volume samples and includes methods for
determining a square root using a Newton Rahpson method along a square root curve. The
method includes making an intelligent guess, computing an error, if the error is too large, a new
guess is computed at a midpoint along a tangent defined by a line drawn between the current
guess and the divisor. Steps in the process are iterated until the error is within acceptable limits,
i.e., the square root is determined.

          Amended claim 1 is directed to a method for approximating a gradient, the gradient
defining a nonlinear transition from one color or gray level to another in an image where the rate
of transition is determined by a function. The method includes identifying an error tolerance,
selecting a starting point and a set point on a curve defined by the function, defining a linear step
from the start point to the set point and calculating a maximum error between the linear step and
the curve. If the maximum error is less than or equal to the error tolerance, the method includes
approximating a portion of the gradient corresponding to the linear step with the linear step. If
the maximum error is more than the error tolerance, the method includes selecting a new set
point on the curve closer to the starting point and repeating the calculating and error steps.

          Knittel does not teach or suggest approximating an gradient or portions thereof with a
linear step(s). Knittel shows a method for determining the square root of a number. Though

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Knittel discusses an iterative process, the process is directed to determining the square root of a number. Knittel does not teach or suggest approximating a gradient, or portion thereof, with a linear step. Knittel at Fig.12 and the accompanying text show a curve associated with its square root process. Knittel's curve, though a representative of a function, is not representative of a color transition associated with a gradient. Further, Knittel's Fig. 12 and the accompanying text in Col. 10 do not teach or suggest approximating a portion of a gradient with a linear step. Knittel's end result is a number, specifically, an answer to a square root for a given target. Applicant's claimed method produces an approximation of a gradient in the form of a linear step. Accordingly, Knittel does not anticipate claim 1.

Claims 2-6, and claims 9-10 depend from claim 1 and are allowable for at least the same reasons set forth above with respect to claim 1.

Claim 11 is directed to a method for approximating a gradient, the gradient defining a nonlinear transition from one color or gray level to another in an image where the rate of transition is determined by a function. The method includes selecting an optimal number of set points on a curve defined by the function including determining each set point by evaluating a maximum error between a line defined by a pair of set points and a corresponding portion of the curve using the error tolerance and approximating the curve by a series of linear portions connecting the set points.

As discussed above, Knittel does not approximate a curve (or portion thereof) by a series of linear portions. Further Knittel does not teach or suggest determining set points by evaluating a maximum error between a line defined by a pair of set points and a corresponding portion of a curve. Knittel evaluates error of a square root calculation by comparing the divisor with the result. Where the two are not equal, no square root has been located. Applicant's claimed method requires the comparison of a linear segment to a portion of curve and determining the maximum error between the two. Set points are then selected using the maximum error. Knittel does not teach or suggest selecting set points in such a manner. Further, Knittel does not, having determined its "set points", approximate a curve using linear segments formed by connecting the set points. Knittel's set points are guesses to the square root answer. The guesses are produced

using an iterative process to move to an answer in a expeditious fashion. The guesses are not themselves somehow linked forming segments that are used to approximate a curve. Accordingly, claim 11 is not anticipated by Knittel.

Claim 12 is directed to a method for approximating a gradient. Claim 12 is allowable for at least the same reasons set forth above with respect to claim 1 and claim 11. In addition, claim 12 is not anticipated by Knittel because the reference fails to teach or suggest selecting an optimal number of linear stops on a curve using Newton's Method to recursively sub-divide the curve to find a next linear portion that approximates a corresponding portion of the curve within the error tolerance. Again, Knittel only shows using a iterative method to determine a solution to a square root problem. Knittel does not teach or suggest sub-dividing curves to find a linear portion that approximates a corresponding portion of the curve.

Claim 13 is allowable for at least the same reasons set forth above with respect to claim 1. Claim 14 is allowable for at least the same reasons set forth above with respect to claim 11. Claim 15 is allowable for at least the same reasons set forth above with respect to claim 12.

If it is determined that fees are due with respect to this Amendment, please apply any charges to deposit account 06-1050.

Respectfully submitted,

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